

September 2, 2021

U.S. Department of Transportation
Docket Management System
1200 New Jersey Ave., SE
Washington, DC 20590

Re: Petition for Exemption under Special Authority for Certain Unmanned Aircraft Systems (49 U.S.C. § 44807) for United States Department of Agriculture - Animal Plant Health Inspection Services - Plant Protection & Quarantine

To Whom It May Concern:

On June 11, 2019, the FAA granted the United States Department of Agriculture - Animal Plant Health Inspection Services - Plant Protection & Quarantine (USDA-APHIS-PPQ) Exemption No. 18247 which exempted USDA-APHIS-PPQ from §§ 107.36; 137.19(c), (d), (e)(2)(ii), (e)(2)(iii), and (e)(2)(v); 137.31(a) and (b); 137.33(a) and (b); 137.41(c); and 137.42 of Title 14, Code of Federal Regulations (14 C.F.R.) to the extent necessary to allow USDA-APHIS-PPQ to operate small unmanned aircraft systems (UAS) to conduct agricultural-related services). This exemption terminated on June 31, 2021.

USDA-APHIS-PPQ hereby requests a new exemption from the same regulations contained in Exemption No. 18247. USDA-APHIS-PPQ submits the following information, identical to the material provided in support of the previous exemption, along with its petition to support its request for an exemption, which includes proprietary and/or confidential supporting documents:

- Exemption No. 18247
- USDA Aerial Application Manual
- Supplement to USDA Aerial Application Manual for Unmanned Aerial Systems - Multirotor
- Hermes V2 Instruction Manual
- CFR Innovations UGS-2G User Manual
- CFR Innovations UGS-4G User Manual

USDA-APHIS-PPQ submits these manuals as confidential documents under separate cover pursuant to 14 C.F.R. § 11.35(b), as the materials contain confidential commercial and proprietary information that USDA-APHIS-PPQ has not and will not share with others. The information contained in these documents is not generally available to the public and is protected from release under the Freedom of Information Act, 5 U.S.C. § 552 *et seq.* UAS manufacturer manuals are included for reference and are considered confidential information for each respective company's UAS.

Manned aircraft conducting agricultural operations can weigh thousands of pounds and carry hundreds of gallons of fuel and payload. The Hermes V2 weighs approximately 15 lbs and carries no ignitable fuel. The Hermes V2 has a payload capacity of 11 lbs. Manned aircraft are operated by an onboard pilot and may carry other onboard crewmembers. The remote pilot in command, any person manipulating the controls, and all visual observers used for the operations under this exemption will be remotely located from the aircraft and will remain outside a

designated safety zone when either small UAS is operating, ensuring that the pilot and visual observer are never so close to the small UAS to pose a hazard to the crew. The risk to an onboard pilot and crew during an incident or accident is eliminated with the use of a small UAS for the proposed operations.

The Hermes V2 has onboard safety features that ensure the small UAS can operate safely under both normal and contingency operating conditions. These features include automation to increase safety and reduce pilot workload. Some examples are the Return to Home (RTH) feature which will navigate the small UA to a certain RTH altitude, then transport the small UA to the location of takeoff, unless overridden with a new home location. RTH activates in the case of lost signal, low battery, and RHL can be activated by the pilot for reasons such as loss of visual line of sight or loss of control of the small UA. The Hermes V2 incorporates fly away prevention measures via mission planning software that permits creation of geofencing areas that prohibit flight paths over unwanted terrain.

The Hermes V2 small UAS fits the definition outlined in the statute as a small unmanned aircraft weighing less than 55 pounds and will be operated under 14 C.F.R. § 107. When conducting agricultural aircraft operations, the Hermes V2 will be operated in accordance with both 14 C.F.R. § 107 and 14 C.F.R. § 137 except in those areas for which an exemption is requested.

A. REGULATIONS FROM WHICH EXEMPTION IS SOUGHT

14 C.F.R. 107.36, Carriage of Hazardous Material
 14 C.F.R. 137.19(c), Certification Requirements, Commercial Operator - pilots
 14 C.F.R. 137.19(d), Certification Requirements; Aircraft
 14 C.F.R. 137.19(e)(2)(ii), Certification Requirements; Knowledge and skill tests; skills; approaches to the working area
 14 C.F.R. 137.19(e)(2) (iii), Certification Requirements; Knowledge and skill tests; skills; flare-outs
 14 C.F.R. 137.19(e)(2)(v); Certification Requirements; Knowledge and skill tests; skills; pullups and turnarounds
 14 C.F.R. 137.31(a), Aircraft Requirements; Certification Requirements
 14 C.F.R. 137.31(b) Shoulder Harnesses
 14 C.F.R. 137.33(a), Carrying of certificate; Certificate carried on the aircraft.
 14 C.F.R. 137.33(b) Registration and airworthiness certificates available.
 14 C.F.R. 137.41(c), Personnel; Pilot in Command
 14 C.F.R. 137.42, Fastening of safety belts and shoulder harnesses.

14 C.F.R. § 107.36 states that a small unmanned aircraft may not carry hazardous material. For purposes of this section, the term hazardous material is defined in 49 C.F.R. § 171.8, which provides as follows:

Hazardous material means a substance or material that the Secretary of Transportation has determined is capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and has designated as hazardous under section 5103 of Federal hazardous materials transportation law (49 U.S.C. 5103). The term includes hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (see 49 C.F.R. 172.101), and materials that meet the defining criteria for hazard classes and divisions in § 173 of this subchapter.

EQUIVALENT LEVEL OF SAFETY

14 C.F.R. § 107.36 prohibits carriage of hazardous materials on small UAS. As described above, 49 C.F.R. § 171.8 defines "hazardous materials." For the proposed operations in which USDA-APHIS-PPQ wishes to engage, the pesticides and herbicides the small UAS will carry in accordance with this exemption may come within the purview of this definition of "hazardous materials." USDA-APHIS-PPQ requests relief from 14 C.F.R. § 107.36 consistent with 49 C.F.R. § 175.9(b) as well as 14 C.F.R. § 137.37 and 137.39 to permit the use of small UAS for agricultural operations under 14 C.F.R. § 137.

Section 175.9 of Chapter 49, Special Aircraft Operations, explains that the prohibition against carrying hazardous materials does not apply to hazardous materials "loaded and carried in hoppers or tanks of aircraft certificated for use in aerial seeding, dusting spraying, fertilizing, crop improvement, or pest control, to be dispensed during such an operation." Given the need to dispense economic poisons and other agriculture related products when conducting agricultural aircraft operations with small UAS in accordance with 14 C.F.R. § 137, USDA-APHIS-PPQ

requests relief from 14 C.F.R. § 107.36. The aircraft will otherwise operate in full compliance with § 107. The requested relief is in accord with the exemption granted to Yamaha (No. 1148) and Drone Seed Co. (No. 17261).

14 C.F.R. § 137.19(c) states that; *Commercial operator – pilots. The applicant must have available the services of at least one person who holds a current U.S. commercial or airline transport pilot certificate and who is properly rated for the aircraft to be used. The applicant himself may be the person available.*

EQUIVALENT LEVEL OF SAFETY

When conducting commercial agricultural aircraft operations, 14 C.F.R. § 137 requires the PIC to hold at least a commercial pilot certificate, and meet all requirements of 14 C.F.R. § 137 unless exempted. The 14 C.F.R. § 107 certificate is intended to permit commercial UAS operations and replace the need for a commercial certificate under 14 C.F.R. § 61 when conducting operations for hire.

USDA-APHIS-PPQ's small UAS pilots will hold a Remote Pilot in Command certificate pursuant to 14 C.F.R. § 107 and small UAS pilots who engaged in agricultural aircraft operations will undergo training in aerial application in accordance with the provided supporting documents. These requirements provide an equivalent level of safety to that established by the requirements for obtaining a Commercial Pilot certificate.

14 C.F.R. § 137.19(d) states that; *Aircraft. The applicant must have at least one certificated and airworthy aircraft, equipped for agricultural operation.*

EQUIVALENT LEVEL OF SAFETY

Because the sUAS is not certificated, USDA-APHIS-PPQ requests an exemption from 14 C.F.R. 137.19(d). The UAS components have a proven operational history and contain design safety features such that operations conducted under the requirements of this exemption will not adversely impact safety. All operations will be preceded by a pre-flight check, as described in the provided supporting documents, to ensure the aircraft is in airworthy condition in accordance with 14 C.F.R. 107.15(a).

14 C.F.R. § 137.19(e)(2)(ii), (iii), and (v) states that; *(e) Knowledge and skill tests. The applicant must show, or have the person who is designated as the chief supervisor of agricultural aircraft operations for him show, that he has satisfactory knowledge and skill regarding agricultural aircraft operations, as described in paragraphs (e) (1) and (2) of this section.*

2) The test of skill consists of the following maneuvers that must be shown in any of the aircraft specified in paragraph (d) of this section, and at that aircraft's maximum certificated take-off weight, or the maximum weight established for the special purpose load, whichever is greater:

(ii) Approaches to the working area.

(iii) Flare-outs.

(v) Pullups and turnarounds

EQUIVALENT LEVEL OF SAFETY

Demonstration of the skills described in those paragraphs is not necessary because they are not compatible or applicable to the operation of the UAS during agricultural aircraft operations as described in USDA-APHIS-PPQ's operating documents and in this petition. USDA-APHIS-PPQ's training and the 14 C.F.R. § 107 certification program provides the PIC with the necessary skills to safely operate the UAS. Granting relief from a demonstration of approaches to the working area, flare-outs, pullups, and turnarounds will not adversely impact safety, therefore relief is warranted. USDA-APHIS-PPQ is not requesting exemption from the remaining skill requirements of § 137.19(e)(2) as required for certification as an agricultural aircraft operator under 14 C.F.R. § 137.

14 C.F.R. § 137.31(a) and (b) states that; *no person may operate an aircraft unless that aircraft-*
(a) Meets the requirements of §137.19(d)
(b) Is equipped with a suitable and properly installed shoulder harness for use by each pilot

EQUIVALENT LEVEL OF SAFETY

An exemption from the requirements related to the installation and use of a shoulder harness and safety belt is warranted because the Petitioner will be operating an unmanned aircraft with no onboard pilot. This requirement is intended to ensure the safety of the onboard pilot during manned agricultural aircraft operations and thus relief does not adversely impact safety.

14 C.F.R. §137.33(a) and (b) states that:
(a) No person may operate an aircraft unless a facsimile of the agricultural aircraft operator certificate, under which the operation is conducted, is carried on that aircraft. The facsimile shall be presented/or inspection upon the request of the Administrator or any Federal, State, or local law enforcement officer.
(b) Notwithstanding part 91 of this chapter, the registration and airworthiness certificates issued for the aircraft need not be carried in the aircraft. However, when those certificates are not carried in the aircraft they shall be kept available for inspection at the base from which the dispensing operation is conducted.

EQUIVALENT LEVEL OF SAFETY

USDA-APHIS-PPQ requests relief from 14 C.F.R. § 137.33(a), Carrying of certificate, which requires that a facsimile of the agricultural aircraft operator certificate be carried on the aircraft. The FAA has previously determined that relief from 14 C.F.R. § 91.9(b)(2) and 91.203(a) and (b) for the carriage of the aircraft flight manual and aircraft registration onboard the aircraft is not necessary. The documents will be kept in a location accessible to the PIC.

14 C.F.R. § 137.41 (c) states that; *Pilot in command. No person may act as pilot in command of an aircraft unless he holds a pilot certificate and rating prescribed by §137.19 (b) or (c), as appropriate to the type of operation conducted. In addition, he must demonstrate to the holder of the Agricultural Aircraft Operator Certificate conducting the operation that he has met the knowledge and skill requirements of §137.19(e). If the holder of that certificate has designated a*

person under § 137.19(e) to supervise his agricultural aircraft operations the demonstration must be made to the person so designated. However, a demonstration of the knowledge and skill requirement is not necessary for any pilot in command who-

(1) Is, at the time of the filing of an application by an agricultural aircraft operator, working as a pilot in command for that operator; and

(2) Has a record of operation under that applicant that does not disclose any question regarding the safety of his flight operations or his competence in dispensing agricultural materials or chemicals.

EQUIVALENT LEVEL OF SAFETY

Because of the relief requested to § 137.19(c), the Petitioner also requests relief to the pilot certificate requirements of § 137.41(c), *Pilot in Command*.

14 C.F.R. § 137.42 states that; *no person may operate an aircraft in operations required to be conducted under part 137 without a safety belt and shoulder harness properly secured about that person except that the shoulder harness need not be fastened if that person would be unable to perform required duties with the shoulder harness fastened*

EQUIVALENT LEVEL OF SAFETY

The relief requested and justification therefore are identical between section 14 C.F.R. § 137.31(b) and 137.42. An exemption is requested from both.

CONCLUSION

USDA-APHIS-PPQ believes that this exemption is in the public's interest as it would reduce hazards and emissions associated with alternate use of manned aircraft to conduct similar aerial applications. As this exemption is consistent with similar exemptions (i.e., Exemption No. 1148 Yamaha Motors Corporation and Exemption No. 17261 Drone Seed Co), USDA-APHIS-PPQ respectfully submits that this exemption request is not precedent setting and therefore qualifies for expedited approval via the FAA's summary grant process.

If you have any questions, or need any additional information to process the requested amendment to the Exemption, please do not hesitate to contact the undersigned.

/s/ Roberto Rodriguez III
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